



NOTES LEISHMANIA

MICROBE OVERVIEW

- Flagellated, parasitic protozoan
- Contains kinetoplast (form of mitochondrial DNA)
- **Hosts:** humans, canids, rodents, hyraxes

Classification

- “Old World”
 - Usually found in Africa, Asia, Middle East, India
 - Includes *Leishmania infantum*, *L. donovani*, *L. tropica*, *L. aethiopica*, *L. major*
- “New World”
 - Usually found in Central, South America; Mexico
 - Includes *L. braziliensis*, *L. mexicana*, *L.*

infantum (chagasi), *L. amazonensis*, *L. panamensis*, *L. guyanensis*

Life stages

- Amastigote
 - Oval; 3–6µm
 - Intracellular, nonmotile form (no external flagella)
 - Found in human circulatory system in mononuclear phagocytes
- Promastigote
 - Spindle-shaped; 15–30µm
 - Extracellular, motile form (long external flagellum)
 - Found in alimentary tract of sandflies

LEISHMANIA

osms.it/leishmania

PATHOLOGY & CAUSES

- Causes disease **leishmaniasis**
- Spread by female **sandflies** of genus *Lutzomyia/Phlebotomus*
- Human leishmaniasis characterized by ulcers (e.g. skin, oral, nasal mucosa), systemic illness
- Lipophosphoglycan layer helps it survive immune system

TYPES

Cutaneous leishmaniasis (CL)

- Most common
- Usually caused by *L. major*, *L. tropica*, *L.*

aethiopica

Mucocutaneous leishmaniasis (ML)

- Causes mucosal, skin ulcers
- Usually caused by *L. braziliensis*

Visceral leishmaniasis (VL)

- AKA **kala-azar**
- Most severe, systemic involvement
- Usually caused by *L. donovani*, *L. infantum*
- **If recurs post-treatment:** post kala-azar leishmaniasis
- Resists host’s complement system, prevents natural killer cells
- Infected macrophages spread infection
 - Spleen → splenomegaly
 - Liver → Kupffer cells with increased size

VISIT...

LANZAROTE
Caliente.COM

- liver dysfunction
- Bone marrow → hyperplastic → ↓ hematopoiesis → pancytopenia
- Lymph nodes → lymphadenopathy

RISK FACTORS

- Poverty, malnutrition, poor hygiene; deforestation, urbanization

SIGNS & SYMPTOMS

CL

- Skin ulcers resembling leprosy lesions

ML

- Ulcers on oropharyngeal, nose mucosa
- **Midfacial destruction:** nose cartilage/septal granulation, tear; ulcers on palate, uvula, lips
- Hoarse voice, gingivitis, periodontitis
- Genital mucosal (severe cases)

VL

- Fever, weight loss, **hepatosplenomegaly**, **pancytopenia**, hypergammaglobulinemia, abdominal tenderness

DIAGNOSIS

LAB RESULTS

- Enzyme-linked immunosorbent assay (ELISA)
- Antigen-coated dipsticks
- Direct agglutination test

Light microscope

- **Amastigotes/Leishman-Donovan body visualization:** blood, aspirates from marrow, spleen, lymph nodes, skin lesions
 - Blood, spleen monocytes
 - Circulating neutrophils, aspirated tissue **macrophages**

Polymerase chain reaction (PCR)

- Detects *Leishmania* kinetoplast DNA (most sensitive, specific)

TREATMENT

MEDICATIONS

CL

- Topical paromomycin, miltefosine, pentamidine isethionate, fluconazole, ketoconazole

ML

- Liposomal **amphotericin B**, miltefosine, pentamidine

VL

- Liposomal **amphotericin B**, miltefosine

OTHER INTERVENTIONS

Prevention

- Nets treated with insecticide while sleeping; over doors, windows
- Insect repellents, insecticide-impregnated dog collars
- Treat infected dogs



Figure 80.1 A leishmaniasis ulcer on the leg.